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May 11, 2016

Mr. Reid P. Harvey, Director
US EPA – Clean Air Markets Division
1201 Constitution Avenue, NW
Washington, DC 20004

Subject: ORIS Code 544 Devon Power LLC Units 15-18
ORIS Code 562 Middletown Power LLC Units 12-15

Dear Mr. Harvey:

In accordance with §75.66(l), Devon Power LLC (Devon) and Middletown Power LLC (Middletown) are petitioning the EPA to allow it to select the traverse points for Appendix E NO_x-to-heat input correlation testing following the procedures in Section 6.5.6 of Appendix A in 40 CFR Part 75 rather than using twelve points under Section 2.1.2.1 in Appendix E. Devon and Middletown are making this request not only for the four combustion turbines at its Devon station, which serve as the primary examples discussed within this petition, but also for the four identical units the Middletown station. The requested change will reduce the amount of time that the units, which are infrequently operated, would have to be brought on-line specifically to perform the tests. The requested change would thereby reduce not only the cost of the tests but also the collateral emissions created by operating the units solely to perform the test without affecting the accuracy of the emissions data reported for the units.

Background

Devon and Middletown own and operates eight identical General Electric LM6000PC combustion turbines at the Devon station (Units 15, 16, 17, and 18) in Milford, Connecticut and the Middletown facility (Units 12, 13, 14, and 15) in Middletown, Connecticut. All eight units can combust either natural gas or ultra-low sulfur distillate oil (Red Dyed Kerosene < 15 ppmvd) and have a nominal rating of approximately 50 MW (Design: 474.9 mmBtu/hr for gas; 456.9 mmBtu/hr for oil). Each unit is equipped with water injection and selective catalytic reduction (SCR) for NO_x control as well as oxidation catalyst for CO control.

The eight combustion turbines at the Devon and Middletown facilities are operated as peaking units as defined in 40 CFR 72.2. The NO_x emissions estimation procedures in Appendix E of Part 75, which applies only to gas-fired and oil-fired peaking units, in lieu of using a continuous emission monitoring system (CEMS) to determine the hourly NO_x emission rate from these units. Under Appendix E, emission testing is done at four evenly-spaced load levels, ranging from the minimum to the maximum unit operating load, and three test runs are performed at each load. The results of the tests establish a simple correlation between the NO_x emissions and the heat input to the unit, which is used to determine the emission rate that is reported on an hourly basis. Under Appendix E, the correlation testing must be repeated at least every five years to re-establish the NO_x correlation.

The eight units operate very infrequently and have very low emissions. For illustration purposes, Table 1 shows a summary of the range of emissions measured during the September 2010 correlation testing as well as the capacity factors and reported emissions during the last three years for the Devon combustion turbines. The Middletown units have similar emissions and have also had capacity factors equal to or less than 1% during the past three years.

Table 1. Devon Combustion Turbine NO_x Emissions and Capacity Factors

Unit	NO _x lb/MMBtu Correlation Test Range		Capacity Factor	Reported NO _x Emissions (tons)
	Natural Gas	Distillate Oil		
15	0.005 - 0.010	0.015 - 0.018	2012 - 0.2% 2013 - 0.5% 2014 - 0.9%	2012 - 0.0 2013 - 0.2 2014 - 0.4
16	0.006 - 0.009	0.008 - 0.016	2012 - 0.2% 2013 - 0.4% 2014 - 1.0%	2012 - 0.0 2013 - 0.1 2014 - 0.4
17	0.008 - 0.008	0.011 - 0.017	2012 - 0.2% 2013 - 0.4% 2014 - 0.9%	2012 - 0.0 2013 - 0.0 2014 - 0.2
18	0.006 - 0.008	0.009 - 0.020	2012 - 0.2% 2013 - 0.4% 2014 - 0.9%	2012 - 0.0 2013 - 0.2 2014 - 0.4

As required by Section 2.1 of Appendix E, testing was scheduled to repeat the NO_x correlation tests in September 2015 and need to be performed at Middletown in the second quarter of 2016. Consistent with previous testing and the requirements of Section 2.1.1 of Appendix E to test across minimum and maximum range of operation, the units are scheduled to be tested at four operating loads of 20MW, 30MW, 40MW and 50MW. As peaking units, the turbines operate on a very limited as needed basis. Thus, it is impossible to schedule the tests when the units would be "normally" operating, and the units will have to be brought on-line just to perform the tests. In addition to the burden of the emissions testing, such operation is costly in terms of the fuel combusted solely to perform the tests. Since the units would not have been operated during the test periods, the requirement to perform the test creates collateral emissions that would otherwise have not been produced by the units.

Request for Relief

For NO_x correlation tests on gas turbines, Section 2.1.2.2 of Appendix E states that sources should:

"...sample at a minimum of 12 points per run at each load level. Locate the sample points according to Method 1 in appendix A-1 to part 60 of this chapter. For each fuel or consistent combination of fuels (and, optionally, for each combination of fuels), measure the NO_x and O₂ concentrations at each sampling point using methods 7E and 3A in appendices A-4 and A-2 to part 60 of this chapter..."

However, since the testing Appendix E requirements were written, EPA has revised the traversing requirements in other sections of the rule to allow flexibility in cases where it can be shown that traversing is not needed. Section 6.5.6 of Appendix A allows sources the option of using stratification testing to reduce the number of traverse points used for relative accuracy test assessments (RATAs). If only minor stratification is demonstrated by meeting the criteria in Section 6.5.6.3(a), sources may use the three point "short reference method measurement line" described in Section 8.1.3 of PS-2. If negligible stratification can be documented by satisfying the criteria in Section 6.5.6.3(a), the source is allowed to forgo traversing altogether, and the sampling can be done at a single reference method measurement point located at least 1.0 meter from the stack wall.

Section §60.4400(a)(3)(i)(B) of Subpart KKKK in Part 60, under which the units are required to conduct annual performance tests, likewise allows sources to use the procedures in Section 6.5.6 of Appendix A in Part 75 to justify alternative traverse points or single point testing. Even Method 7E, which will be used to measure the emissions during the NO_x correlation test, now includes similar stratification test-based provisions for reducing traversing that were added as part of the revisions to the instrumental test methods that EPA promulgated in 2006. These alternative traverse point options were included among revisions that were added to make the test requirements "less burdensome without sacrificing data quality."¹

As allowed for the performance tests conducted for Subpart KKKK (and as would be allowed for any RATA conducted at the sites), GenConn is requesting to use the procedures in Section 6.5.6 of Appendix A to select the traverse points for the NO_x correlation testing. Devon and Middletown believe that this request is consistent with the Agency's aforementioned effort to make the testing "less burdensome without sacrificing data quality" and with the overall goal of simplifying the monitoring requirements for peaking units that is represented by the Appendix E provisions themselves. Since the stratification test results will document whether or not stratification is present and the conditions in Section 6.5.6.3 will be used to determine the degree of traversing necessary to ensure that the emissions are appropriately represented, the proposed change will have negligible impact on the reported emissions.

Given that EPA allows these procedures for CEMS certification and quality assurance testing under Part 75 and for compliance testing under Subpart KKKK, it would seem reasonable to extend this option for Appendix E sources where more simplified emission estimation techniques are afforded for less frequently operated oil and gas fired units. Furthermore, because Appendix E testing has to be done at multiple load levels, reducing the number of traverse points will significantly reduce the time and effort associated with the testing. Reducing the time required to perform the test will reduce the amount of time that the units will be required to operate and, thus, minimize the otherwise unnecessary emissions from the units.

¹ Federal Register, Vol. 63, Number 98 (Thursday, May 21, 1998), p. 28066.

Tables 2a - 2d show the results of the recent stratification tests conducted in July 2015 on the four combustion turbines at the Devon Generating Station. These tests were part of a compliance emissions test program to demonstrate compliance with the emission limits listed in the facility's Title V Operating Permit No. 105-0063-TV. The results show that the units would easily qualify for single point sampling. Based on these results, we propose to use single point traversing during the NO_x correlation testing in the future at Devon and will conduct similar stratification testing at Middletown to establish the appropriate sampling procedures to use for those units in accordance with Section 6.5.6 of Appendix A.

Table 2a. Devon Unit 15 Stratification Testing Results

Unit 15 - Natural Gas					Unit 15 – Ultra Low Sulfur Distillate Oil				
Point	O ₂ %	Diff. (% O ₂)	NO _x ppm	Diff. (ppm)	Point	O ₂ %	Diff. (% O ₂)	NO _x ppm	Diff. (ppm)
A1	14.24	0.04	2.35	0.25	A1	14.52	0.02	4.16	0.38
A2	14.27	0.01	2.35	0.25	A2	14.50	0.04	4.39	0.15
A3	14.26	0.02	2.82	0.22	A3	14.53	0.01	4.37	0.17
B1	14.25	0.03	2.89	0.29	B1	14.51	0.03	5.38	0.84
B2	14.25	0.03	2.96	0.36	B2	14.50	0.04	5.32	0.78
B3	14.28	0.00	2.78	0.18	B3	14.53	0.01	4.95	0.41
C1	14.28	0.00	2.78	0.18	C1	14.56	0.02	4.71	0.17
C2	14.31	0.03	2.45	0.15	C2	14.55	0.01	4.65	0.11
C3	14.30	0.02	2.51	0.09	C3	14.55	0.01	4.51	0.03
D1	14.31	0.03	2.25	0.35	D1	14.55	0.01	3.90	0.64
D2	14.25	0.03	2.81	0.21	D2	14.55	0.01	4.02	0.52
D3	14.31	0.03	2.3	0.30	D3	14.57	0.03	4.13	0.41
Avg	14.28	--	2.60	--	Avg	14.54	--	4.54	--

Table 2b. Devon Unit 16 Stratification Testing Results

Unit 16 - Natural Gas					Unit 16 – Ultra Low Sulfur Distillate Oil				
Point	O ₂ %	Diff. (% O ₂)	NO _x ppm	Diff. (ppm)	Point	O ₂ %	Diff. (% O ₂)	NO _x ppm	Diff. (ppm)
A1	14.38	0.01	2.42	0.32	A1	14.47	0.02	3.45	0.17
A2	14.38	0.01	2.94	0.20	A2	14.47	0.02	3.27	0.35
A3	14.4	0.03	2.67	0.07	A3	14.47	0.02	3.42	0.20
B1	14.46	0.09	2.69	0.05	B1	14.49	0.04	3.85	0.23
B2	14.37	0.00	2.84	0.10	B2	14.45	0.00	3.68	0.06
B3	14.38	0.01	2.75	0.01	B3	14.46	0.01	3.46	0.16
C1	14.32	0.05	2.58	0.16	C1	14.4	0.05	3.67	0.05
C2	14.31	0.06	2.62	0.12	C2	14.4	0.05	3.74	0.12
C3	14.35	0.02	2.52	0.22	C3	14.42	0.03	3.80	0.18
D1	14.37	0.00	2.81	0.07	D1	14.45	0.00	3.59	0.03
D2	14.32	0.05	2.92	0.18	D2	14.43	0.02	3.72	0.10
D3	14.35	0.02	3.07	0.33	D3	14.45	0.00	3.8	0.18
Avg	14.37	--	2.74	--	Avg	14.45	--	3.62	--

Table 2c. Devon Unit 17 Stratification Testing Results

Unit 17 - Natural Gas					Unit 17 – Ultra Low Sulfur Distillate Oil				
Point	O ₂ %	Diff. (% O ₂)	NO _x ppm	Diff. (ppm)	Point	O ₂ %	Diff. (% O ₂)	NO _x ppm	Diff. (ppm)
A1	14.43	0.06	2.54	0.24	A1	14.52	0.01	6.28	0.06
A2	14.34	0.03	2.91	0.13	A2	14.55	0.04	5.92	0.42
A3	14.40	0.03	2.5	0.28	A3	14.55	0.04	5.68	0.66
B1	14.32	0.05	3.22	0.44	B1	14.52	0.01	6.50	0.16
B2	14.36	0.01	2.97	0.19	B2	14.52	0.01	6.40	0.06
B3	14.35	0.02	2.73	0.05	B3	14.52	0.01	5.91	0.43
C1	14.34	0.03	2.97	0.19	C1	14.47	0.04	7.34	1.00
C2	14.40	0.03	3.15	0.37	C2	14.47	0.04	7.11	0.77
C3	14.34	0.03	2.86	0.08	C3	14.5	0.01	6.43	0.09
D1	14.34	0.03	2.42	0.36	D1	14.5	0.01	6.22	0.12
D2	14.38	0.01	2.39	0.39	D2	14.5	0.01	6.24	0.10
D3	14.39	0.02	2.67	0.11	D3	14.52	0.01	6.00	0.34
Avg	14.37	--	2.78	--	Avg	14.51	--	6.34	--

Table 2d. Devon Unit 18 Stratification Testing Results

Unit 18 - Natural Gas					Unit 18 – Ultra Low Sulfur Distillate Oil				
Point	O ₂ %	Diff. (% O ₂)	NO _x ppm	Diff. (ppm)	Point	O ₂ %	Diff. (% O ₂)	NO _x ppm	Diff. (ppm)
A1	14.31	0.01	1.98	0.41	A1	14.49	0.02	4.91	0.50
A2	14.30	0.02	2.04	0.35	A2	14.49	0.02	5.18	0.23
A3	14.31	0.01	2.19	0.20	A3	14.50	0.01	5.19	0.22
B1	14.35	0.03	2.92	0.53	B1	14.50	0.01	6.44	1.03
B2	14.27	0.05	3.00	0.61	B2	14.45	0.06	6.35	0.94
B3	14.30	0.02	2.66	0.27	B3	14.47	0.04	5.94	0.53
C1	14.33	0.01	2.64	0.25	C1	14.52	0.01	5.55	0.14
C2	14.33	0.01	2.63	0.24	C2	14.52	0.01	5.45	0.04
C3	14.33	0.01	2.52	0.13	C3	14.52	0.01	5.11	0.30
D1	14.35	0.03	1.84	0.55	D1	14.57	0.06	4.84	0.57
D2	14.33	0.01	2.05	0.34	D2	14.52	0.01	5.08	0.33
D3	14.31	0.01	2.19	0.20	D3	14.52	0.01	4.91	0.50
Avg	14.32	--	2.39	--	Avg	14.51	--	5.41	--

Please note this this is a resubmittal of the Petition dated August 17th, 2015. The NO_x Correlation testing for the Devon station has been completed in September, 2015 using the requirements of 40 CFR Part 75, Appendix E, section 2.1.1.1. Thank you for your consideration on this petition. If you have any questions, please contact Mr. Patrick Yough at 609.524.5398 or patrick.yough@nrg.com.

“I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.”

“I am authorized to make this submission on behalf of the owners and operators of the source or units for which the submission is made.”

Respectfully Submitted,



Don Guzzetta
Designated Representative
Devon Power LLC
Alternate Designated Representative
Middletown Power LLC

CC: Susan Lancey, EPA Region 1